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09698779.102700

Box Patent Application
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Enclosed for filing is a patent application under 37 CFR 1.53(b) of:

Inventor [or Application Identifier]: Peter Michael Gits and Dale J. Seavey
For: SMART SECRETARY

[If continuing application] This application is a ☐ continuation, ☐ divisional, ☐ continuation-in-part of prior application Serial No. _____, filed _____.

Prior application info: Examiner: _____ Group Art Unit _____

Enclosures:
- ☒ Specification (pages 1-10); claims (pages 11-16); abstract (page 17)
- ☒ 7 sheet(s) of drawings
- ☒ Declaration or Combined Declaration and Power of Attorney
  - ☒ Newly executed (original or copy)
  - ☐ Copy from a prior application (37 CFR 1.63(d))
  - ☐ Incorporation by Reference--The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
  - ☐ Deletion of Inventors (signed statement attached deleting inventor(s) named in the prior application (37 CFR 1.63(d)(2) and 1.33(b)
- ☐ Power of Attorney
- ☒ Assignment with cover sheet
- ☐ Certified copy of priority document:

☐ Information Disclosure Statement with Form PTO 1449
☐ Copies of references listed on attached Form PTO-1449
☐ Preliminary Amendment
☐ Change of Address
☒ Return Postcard

CLAIMS AS FILED				
For	Number Filed	Number Extra	Rate	Basic Fee $710.00
Total Claims	39-20	19	x $ 18 =	342.00
Independent Claims	4-3	1	x $ 80 =	80.00
Multiple Dependent Claim Fee			x $270 =	0.00
TOTAL FILING FEE				$1,132.00

☐ Cancel in this divisional application original claims _____ of the prior application Serial No. _____ before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)

☒ A check in the amount of $1,172.00 to cover ☒ filing fee and ☒ assignment recordal fee ($40) is enclosed.
☒ Any deficiency or overpayment should be charged or credited to deposit account number 13-1703. A duplicate copy of this sheet is enclosed.

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Respectfully submitted,

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SMART SECRETARY

RELATED APPLICATION DATA

This application is a continuation of, and claims priority to, US Provisional Patent Application 60/XXX,XXX, filed August 9, 2000.

CROSS REFERENCE TO RELATED APPLICATIONS

This application relates to the following US patent applications, all commonly assigned to the assignee of this application.

Serial No.	Atty. Dkt. No.	Title	Filed
	2705-128	Fully Distributed, Scalable Interface, Communication System	
	2705-138	Net Lurkers	
	2705-139	Replication of a Scalable Interface System	
	2705-140	Object Agents in a Scalable Interface System	
	2705-141	Memory Management of a Scalable Interface System	
	2705-142	Interconnective Agents in a Scalable Interface System	
	2705-143	Multicasting and Joining in a Scalable Interface System	
	2705-144	Scalable Interface Community Service	

FIELD

This invention pertains to object routing and, more particularly, to object routing in a Scalable Interface system.

BACKGROUND

Until recently, it was unusual for people to have more than one telephone number at which they could be contacted. People generally could only be reached at home: with limited exceptions people were not accessible at work.

In the last few decades, this fact has changed. People have become more reachable at work. Facsimile machines have made possible the electronic transfer of written communications. Pagers, and later cellular and satellite telephones, have allowed people to receive communications even when not within reach of a land-line telephone. With the

increased popularity of the Internet, more and more people are installing multiple telephone lines to their homes. And people are becoming increasingly mobile, having more than one office at which they work (and hence, multiple work telephones).

But with each of these new forms of communication, a new telephone number is required. Finding the right number to call has become a more complicated proposition. This is especially true of home, work, and cellular/satellite telephones, where there can be multiple different ways to reach a person, but not all telephone numbers will work at any given time.

If a telephone call is placed to one of a person's telephone numbers, if the person is not currently accessible at that telephone number, the caller must try another of the callee's telephone numbers. If the callee is not at the second telephone number, the caller must try a third telephone number, and then a fourth, and so on. Eventually, either the caller will reach the callee or will give up. The process is totally outside the callee's control and is totally dependent on the caller's luck in selecting a telephone number at which the callee can be reached.

This problem is exacerbated when the callee knows he will not be available. Unless there is a mechanism for the callee to route calls to someone who can take a message (for example, an assistant or voicemail), the call will never reach the callee. And even when such mechanisms are available for forwarding calls, they have limited capabilities. The mechanisms can only forward calls to a single destination, providing no flexibility for the possibility that the forwarded destination may be unable to take the call.

The present invention addresses these and other problems associated with the prior art.

SUMMARY

The Smart Secretary is an agent of the Scalable Interface system designed to route objects according to a user's preferences. When the Scalable Interface system notifies the Smart Secretary that an object exists in the space for the Smart Secretary, the Smart Secretary picks up the object. The Smart Secretary then determines for which user the object is destined and accesses the user's preference settings. (A default preference setting specifies that the object is to routed only according to the directions enclosed with the object.) The Smart Secretary then routes the object according to the user's preference settings, even if they override the specified destination included with the object.

The foregoing and other features, objects, and advantages of the invention will become more readily apparent from the following detailed description, which proceeds with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a computer on which the preferred embodiment of the invention is operable, connected to a network.

FIG. 2 shows a Scalable Interface system in which a Smart Secretary according to the preferred embodiment of the invention can operate.

FIGs. 3A-3C show a flowchart of the method used by the Smart Secretary of FIG. 2 for routing objects.

FIG. 4 shows telephones and answering machines connected to Communities as in FIG. 2.

FIG. 5 shows a Smart Secretary according to the preferred embodiment placing a sequence object in the space.

DETAILED DESCRIPTION

FIG. 1 shows a computer system 105 in accordance with the invention. Computer system 105 includes a computer 110, a monitor 115, a keyboard 120, and a mouse 125. Computer 110 includes hardware components, such as processor and memory (not shown). Computer system 105 may also include other equipment not shown in FIG. 1, for example, other input/output equipment or a printer.

In FIG. 1, computer system 105 is connected to network 130 via network connection 135. A Scalable Interface system for use in distributed communication systems as described in U.S. Patent Application Serial No. _____, titled "Fully Distributed, Scalable Interface, Communication System," filed _____, operates over network 130. Smart Secretary, running on computer system 105, is part of the Scalable Interface system. The following material is drawn from U.S. Patent Application Serial No. _____, titled "Fully Distributed, Scalable Interface, Communication System," filed _____:

> The Scalable Interface system uses a combination of a persistent store and agents to provide a communication system extensible to nearly all types of interfaces and any number of users and applications. The Scalable Interface system defines Communities around the persistent store, or space,

with space or non-space oriented interpreters, referred to here as Double Agents. Double Agents will be discussed in more detail further.

A Community as used here will refer to a collection of these agents and a persistent store. Any type of persistent store could be used, with the capabilities of having objects inserted into the store such that they do not lose their attributes and of providing a notification service as the objects are inserted. In this particular example, JavaSpaces™ [technology] will be used as the persistent stores, but the Scalable Interface system is applicable to any similar technology. For ease of discussion, the persistent stores will be referred to as "Spaces." Spaces can be used in several different implementations, and the following discussion is meant only as an example.

By maintaining the "wellness" information of agents and services within a Community, the Community Service also has the ability to launch new clones of these agents and services throughout the different Communities based on load metrics. This provides for some dynamic distributed load behavior. For example, if one [community] where to be hit with a 1000 calls within a minute, the Community Service could launch another (N) agents anywhere within the Community to handle this increased load. This Service could also leverage addition hardware that is on standby to increase performance during peak loads. Alternatively, it could shut down lightly utilized agents and unused Services when the load decreases. Members interact with the Spaces via the agents, and unused agents can be removed to make room for new agents. Most of these agents are what will be referred to as "Double Agents."

Double Agents are analogous to translation modules. They can communicate with one protocol on one side and the protocol used in the Space on the other. Each Space will have a set of dedicated Double Agents. For example, a Space with a phone member will have a phone Double Agent. It may interact according to a common protocol, such as SIP (session initiation protocol), with a SIP phone. It will then convert the request or other communication from the SIP phone to Space protocols. The Space protocol will more than likely involve a typing process to type the communication according to Java™ types and then placing it as an object in the Space.

Double Agents are notified of new objects placed in the Space by a publish-and-subscribe process. Devices that interact with certain types of objects will subscribe with the Space to be notified when such an object is inserted into the Space. The Space then publishes the new object to all of the subscribed Double Agents. The subscribed Double Agents then pick it up from the Space. The object placed in the Space will be leased, and if no agent picks up the object before the lease expires, the object will be removed.

The nature of the Double Agents allows the system to be extremely scalable and extensible. If the system is to be made larger, a larger number of any type of Double Agents can be added. If more types of interfaces are needed, all the system requires to extend to include these are Double Agents written for those devices. The production of Double Agents is expedited by use of a class library.

An individual Community revolves around a Space, usually a local Space. The Space allows decoupling of associations between applications, clients, servers, proxies, etc., and acts as an intermediary. It also allows for typing of objects as well as a notification process for any new objects entered into the Space. Using the Space alleviates the problems with Jini™ [technology], noted above, when used in combination with the Double Agents and the Community Service.

(JavaSpaces, Java, and Jini are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries.)

FIG. 2 shows a Scalable Interface system in which a Smart Secretary according to the preferred embodiment of the invention can operate. In FIG. 2, Scalable Interface system 205 includes two spaces, 210-1 and 210-2. However, a person skilled in the art will recognize that there can be more or fewer spaces in Scalable Interface system 205. A smart secretary object 215 has been dropped in space 210-1 (perhaps by a Double Agent for a telephone: see FIG. 4). Scalable Interface system 205 alerts Smart Secretary 220-1 that a smart secretary object has been dropped in space 210-1. In FIG. 2, the fact that object 215 is a smart secretary object is graphically represented by the arched shape of the object, designed to match cutout 225 of Smart Secretary 220-1, but a person skilled in the art will recognize that this is simply a visual convenience. Smart Secretary 220-1 accesses smart secretary object 215 and determines (from the contents of smart secretary object 215) the user for which smart

secretary object 215 is destined. Smart Secretary 220-1 then checks to see if registration entry 230 exists for the user for which the smart secretary object 215 is destined. If registration entry 230 exists, then Smart Secretary 220-1 accesses that user's preference setting 235 (if the user has not provided a preference setting, Smart Secretary 220-1 routes smart secretary object 215 using default routing). (Preference settings will be explained more with reference to FIG. 4 below.) Smart Secretary 220-1 can then route the communication wrapped in smart secretary object 215 according to the appropriate preference settings.

A person skilled in the art will recognize that there can be more than one Smart Secretary in Scalable Interface system 205. For example, in FIG. 2, there are three Smart Secretaries 220-1, 220-2, and 220-3. Any of these Smart Secretaries can receive the notice from Scalable Interface system 205 of smart secretary object 215 and respond to it.

Because Smart Secretary processes objects on behalf of sources, Smart Secretary is effectively an agent for the source. But Smart Secretary 220-1 is a part of the Scalable Interface system and otherwise separate from any source that causes a smart secretary object to be dropped into space 210-1. The use of the term "agent" should not be considered to tie Smart Secretary to a particular object source.

FIGs. 3A-3C shows a flowchart of the method used by the Smart Secretary of FIG. 2 for routing objects. At step 305, the Smart Secretary receives a notice from the Scalable Interface system that a smart secretary object exists in the space. At step 310, the Smart Secretary accesses the smart secretary object from the space. At step 315, the Smart Secretary checks to see if the recipient is a registered user in the Scalabe Interface system. If the recipient is not registered, then at step 320 the object is routed using default routing (i.e., the object is sent to the specified destination without change). Otherwise, at step 325, the Smart Secretary checks to see how many possible routing destinations are included in the user preference settings. If only one routing destination is included in the user preference settings, then at step 330 the smart secretary object is routed to the listed destination. (The smart secretary wrapper is also removed from the object and the object is wrapped in the appropriate wrapper for the routing destination.)

If there is more than one possible destination for the object, then at step 335, the Smart Secretary checks to see how the object is to be routed through the destinations. If the object is to be routed using sequential delivery, at step 340, the routing destinations are ordered. The object loses its smart secretary wrapper and is wrapped with a sequence wrapper, which includes the ordered list of routing destinations. Then, at step 345, the

sequence object is then dropped into the space for a sequence object to try to route the object to the destinations in order. Otherwise, if the object is to be broadcast to the destinations, then at step 350 the destinations are identified, and at step 355 a broadcast object is placed in the space to broadcast the object to the destinations. As with sequential routing, the object loses its smart secretary wrapper and is wrapped with a broadcast wrapper. Additional information about the broadcast agent can be found in U.S. Patent Application Serial No. _____, titled "Multicasting and Joining in a Scalable Interface System," filed _____.

Now that the operation of the Smart Secretary has been explained, its use can be described. FIG. 4 shows telephones and voicemail connected to Communities as in FIG. 2. In FIG. 4, a caller places a call from Internet protocol (IP) telephone 405. (Although FIG. 4 demonstrates the use of Smart Secretary in the context of telephonic communication, a person skilled in the art will recognize that Smart Secretary is extensible beyond telephonic communication: for example, computer communication across an internetwork, either local, wide-area, or global.) Double Agent 410 translates the data from IP telephone 405 into objects understandable by Scalable Interface system 415-1 (such as Scalable Interface system 205 of FIG. 2). The caller may be calling IP telephones 420 or 425 (IP telephones on the same Scalable Interface system), IP telephone 430 (an IP telephone on a different Scalable Interface system, such as Scalable Interface system 415-2), or a regular telephone, such as telephone 435, accessible via private branch exchange (PBX) 440. Because they are part of Communities, Double Agent 445 and 450 interface between IP telephones 420 and 425, respectively and Scalable Interface system 415-1; similarly, Double Agent 455 interfaces between IP telephone 430 and Scalable Interface system 415-2.

For purposes of FIG. 4, assume that the called telephone is IP telephone 420. When the user dials IP telephone 420 from IP telephone 405, Double Agent 410 drops a smart secretary object in the space within Scalable Interface system 415-1. The smart secretary object (naturally) includes the dialed telephone number, which the Smart Secretary uses to determine the intended recipient. After determining the intended recipient, the Smart Secretary accesses the callee's preference settings.

Assume for the moment that the preference settings indicate that the callee has made no preference settings (i.e., the callee wants all calls routed to the destination telephone as would normally happen). The Smart Secretary then forwards the object (minus the smart

secretary wrapper) to Double Agent 445. Double Agent 445 causes IP telephone 420 to ring, and if the recipient doesn't answer, eventually the caller will hang up.

Now consider the possibility that the callee may be a manager who is frequently away from his desk. The callee may consider that all calls are important, and should be answered either by himself or his assistant. The callee can set his preference settings to indicate that IP telephone 420 is to ring five times. If IP telephone 420 is not answered within five rings, then IP telephone 425 (his assistant's telephone) is to ring five times. If his assistant does not answer within five rings, then voicemail 460 (supported by Double Agent 465) is to take the call. In this way, the callee can try to ensure that someone takes the call, even if the call is bounced around the network several times. This is all done transparently to the caller: the caller at IP telephone 405 is not aware that his call is being rerouted to different destinations.

If the manager works out of multiple offices, he can set his preferences to ring each of his phones in turn, until someone picks up. So, in the above example, if the manager alternates between IP telephones 420 and 430 (for example, IP telephone 420 in Los Angeles and IP telephone 430 in New York City), IP telephone 420 can be set to ring first, then IP telephone 430, then the manager's assistant's IP telephone 425, and finally voicemail 460, until someone takes the call. Note that the fact that IP telephones 420, 430, and 425 are part of different Communities does not affect the preference setting: transfer of a call between Communities 415-1 and 415-2 is handled seamlessly. See related U.S. Patent Application Serial No. _____, titled "Interconnective Agents in a Scalable Interface System," filed _____ for more information about transferring communications between Communities.

Finally, if the callee spends his time at telephone 435, which is not connected to a Scalable Interface system (for example, the callee can be out in the field with only a cellular or satellite telephone for receiving calls), the callee can set his preference settings to forward calls to telephone 435. The fact that calls to telephone 435 must pass through PBX 440 does not affect the operation of Smart Secretary.

When Smart Secretary routes an object using the sequencer agent or the broadcast agent, it may happen that Smart Secretary is re-invoked. Consider the earlier example of a manager who wants his calls routed to his assistant if he does not answer the call within five rings. The assistant may have her own preferences. For example, knowing that she is working at home one day, the assistant may set her preferences to route calls from her desk to her home. Thus, even though the manager specified that telephone on his assistant's desk was to ring, the call is routed to the assistant at her home, as desired.

Where Smart Secretary is re-invoked in this matter, two issues arise. The first issue is loops in object routing. In the manager/assistant example above, it can happen that the manager and assistant each, in an effort to make sure a call is answered, has his calls routed to the other in case no-one picks up at the primary destination. Because Smart Secretary is invoked for routing calls to both parties, a call to the manager will be routed to the assistant. When the assistant does not answer, the call will be routed according to the assistant's preferences, and will be routed back to the manager, completing the loop. Such loops can be avoided by having the gateway examine the call data stored in the object. In the above manager/assistant example, when the call is routed back to the manager, the gateway examines the call data and determines that the call had been routed to the manager previously. The gateway then intentionally does not deliver the object, thereby breaking the loop.

The second issue is the priority of routing destinations as new destinations are located. Consider a situation where a user has his preferences set up to route incoming calls to three different destinations sequentially. For clarity, identify the user as A and the call destinations as A1, A2, and A3. As discussed above, the users at each of these destinations can specify their own preferences. For example, call destination A2 can be the telephone of a user B, who has set his preferences up to route calls to destinations B1, B2, and B3. When the sequencer agent attempts to route the call to destination A2, user B's preferences are invoked via Smart Secretary. In the preferred embodiment, when Smart Secretary processes user B's preferences, it is unaware of any prior routing of the call according to user A's preferences. But because the smart secretary object dropped by the sequencer includes a flag, Smart Secretary knows to return the sequence of user B's preferences to the sequencer (via a flag included in the sequencer object that specifies the sequencer agent). Sequencer can then insert the sequence returned by Smart Secretary into the earlier sequence. Thus, after the sequencer inserts user B's preferences, the sequence of destinations becomes A1, B1, B2, B3, and A3.

Although the above description is how Smart Secretary operates in the preferred embodiment, a person skilled in the art will recognize that other techniques for combining sequences are possible. For example, to avoid the possibility of a call being routed too far away from the original destination (and also to avoid loops), the sequencer agent can only use the first entry in user B's sequence. All other routing destinations specified by user B are rejected.

One limitation of the approach taken in combining sequences in the preferred embodiment is the routing of calls to voicemail. In the above example, consider the possibility that the final destination specified by both users A and B (i.e., call destinations A3 and B3) are voicemail. In general, in choosing between the two voicemail destinations, it is preferable to route the call to user A's voicemail, since user A was the original destination of the call. This is handled in the preferred embodiment by having the sequencer agent recognize that one of the destinations in the inserted sequence is for a voicemail and not adding the voicemail destination to the sequence.

FIG. 5 shows a Smart Secretary according to the preferred embodiment placing a sequence object in the space. In FIG. 5, Smart Secretary 220 has been notified by space 210-1 that smart secretary object 215 was dropped into the space. Smart Secretary 220 retrieves smart secretary object 215 and, after determining the user for which the object is destined, accesses user preference setting 235. User preference setting 235 indicates that object 215 is to be routed first to IP telephone 420, then to IP telephone 425, and finally to voicemail 460. Because a sequence of destinations is to be performed, Smart Secretary 220 drops sequence object 505 into space 210-1. Sequence 510 then picks up sequence object 505 and tries each of the destinations in turn. In FIG. 5, IP telephone 425 is answered, and so connection 515 is established between the caller and callee.

Alternatively, as described above, user preference setting 235 can specify a broadcast of the object to all possible destinations. For example, user preference setting 235 can specify that the object is to be broadcast to IP telephone 420, IT telephone 425, and voicemail 460. (In this example, voicemail 460 has been configured to respond to the object only after waiting a few seconds for someone else to have a chance to respond first.) Because a broadcast is to be performed, Smart Secretary 220 drops broadcast object 520 into space 210-1. Broadcast agent 525 then picks up broadcast object 520 and broadcasts the object to each of the destinations. In FIG. 5, IP telephone 425 picked up the object first, and so connection 515 is established between the caller and callee.

Having illustrated and described the principles of our invention in a preferred embodiment thereof, it should be readily apparent to those skilled in the art that the invention can be modified in arrangement and detail without departing from such principles. We claim all modifications coming within the spirit and scope of the accompanying claims.

We claim:

1. A message-processing agent operable in a Scalable Interface system, the message-processing agent comprising:

a receiver designed to receive an object from a space in the Scalable Interface system;

a default routing identifying a destination for the object; and

a routing module designed to route the object to the destination.

2. A message-processing agent according to claim 1, the message-processing agent further comprising a user preference setting including a second destination for the object.

3. A message-processing agent according to claim 2, wherein the second destination is identical to the destination.

4. A message-processing agent according to claim 2, wherein the second destination is different from the destination.

5. A message-processing agent according to claim 2, wherein the user preference setting includes a plurality of distinct destinations for the object.

6. A message-processing agent according to claim 5, wherein the message-processing agent is designed to route the object sequentially to each distinct destination for the object until the object is received at a first destination.

7. A message-processing agent according to claim 6, wherein the message-processing agent is designed to place a second object in the space for a sequence agent to sequentially route the object to each distinct destination for the object until the object is received at the first destination.

8. A message-processing agent according to claim 5, wherein the message-processing agent is designed to broadcast the object to each distinct destination for the object until the object is received at a first destination.

9. A message-processing agent according to claim 8, wherein the message-processing agent is designed to place a second object in the space for a broadcast agent to broadcast the object to each distinct destination for the object until the object is received at the first destination.

10. A message-processing agent according to claim 2, wherein the second destination includes routing instructions based on the source of the object.

11. A message-processing agent according to claim 1, wherein the first destination includes a telephone.

12. A message-processing agent according to claim 1, the message-processing agent further comprising a registration entry for a user.

13. A method for using a message-processing agent to process an object in a space in a Scalable Interface system, the method comprising:

receiving an object;

accessing a preference setting; and

routing the object according to the preference setting.

14. A method according to claim 13, wherein receiving an object includes receiving notice of the object from the space in the Scalable Interface system.

15. A method according to claim 13, wherein accessing a preference setting includes selecting a preference setting according to an ultimate recipient of the object.

16. A method according to claim 15, wherein selecting a preference setting includes selecting a user preference setting according to the ultimate recipient if the user preference setting exists.

17. A method according to claim 16, wherein selecting a user preference setting includes checking to see if the ultimate recipient of the object is registered with the Scalable Interface system.

18. A method according to claim 15, wherein selecting a preference setting includes selecting a default routing according to the ultimate recipient if no user preference setting exists.

19. A method according to claim 13, wherein routing the object includes sending the object to a destination.

20. A method according to claim 13, wherein routing the object includes:

determining at least two destinations for the object; and

placing a sequence object in the space in the Scalable Interface system for a sequence agent to sequentially route the object to each destination for the object until the object is received.

21. A method according to claim 13, wherein routing the object includes:

determining at least two destinations for the object; and

placing a broadcast object in the space in the Scalable Interface system for a broadcast agent to broadcast the object to each destination for the object until the object is received.

22. A computer-readable medium containing a program to use a message-processing agent to process an object in a space in a Scalable Interface system, the program comprising:

receiving software to receive the object;

accessing software to access a preference setting; and

routing software to route the object according to the preference setting.

23. A computer-readable medium according to claim 22, wherein the receiving software includes receiving software to receive notice of the object from the space in the Scalable Interface system.

24. A computer-readable medium according to claim 22, wherein the accessing software includes selection software to select a preference setting according to an ultimate recipient of the object.

25. A computer-readable medium according to claim 24, wherein the selection software includes selection software to select a user preference setting according to the ultimate recipient if the user preference setting exists.

26. A computer-readable medium according to claim 25, wherein the selection software includes checking software to check if the ultimate recipient of the object is registered with the Scalable Interface system.

27. A computer-readable medium according to claim 24, wherein the selection software includes selection software to select a default routing according to the ultimate recipient if no user preference setting exists.

28. A computer-readable medium according to claim 22, wherein the routing software includes sending software to send the object to a first destination.

29. A computer-readable medium according to claim 22, wherein the routing software includes:

determination software to determine at least two destinations for the object; and

placing software to place a sequence object in the space in the Scalable Interface system for a sequence agent to sequentially route the object to each destination for the object until the object is received.

30. A computer-readable medium according to claim 22, wherein the routing software includes:

determination software to determine at least two destinations for the object; and

placing software to place a broadcast object in the space in the Scalable Interface system for a broadcast agent to broadcast the object to each destination for the object until the object is received.

31. A message-processing agent operable in a Scalable Interface system, the message-processing agent comprising:

means for receiving for receive the object;

means for accessing a preference setting; and

means for routing the object according to the preference setting.

32. A method according to claim 31, wherein the means for receiving includes means for receiving notice of the object from the space in the Scalable Interface system.

33. A method according to claim 31, wherein the means for accessing includes means for selecting a preference setting according to an ultimate recipient of the object.

34. A method according to claim 33, wherein the means for selecting includes second means for selecting a user preference setting according to the ultimate recipient if the user preference setting exists.

35. A method according to claim 34, wherein the second means for selecting includes means for checking to see if the ultimate recipient of the object is registered with the Scalable Interface system.

36. A method according to claim 33, wherein the means for selecting includes means for selecting a default routing according to the ultimate recipient if no user preference setting exists.

37. A method according to claim 31, wherein the means for routing includes means for sending the object to a destination.

38. A method according to claim 31, wherein the means for routing includes:

means for determining at least two destinations for the object; and

means for placing a sequence object in the space in the Scalable Interface system for a sequence agent to sequentially route the object to each destination for the object until the object is received.

39. A method according to claim 31, wherein the means for routing includes:

means for determining at least two destinations for the object; and

means for placing a broadcast object in the space in the Scalable Interface system for a broadcast agent to broadcast the object to each destination for the object until the object is received.

ABSTRACT OF THE DISCLOSURE

A message-processing agent receives an object from a space in a Scalable Interface system. The message-processing agent determines the destination of the object and checks a preference setting for the destination. The message-processing agent then routes the object to its destination as determined by the preference settings, possibly altering the destination in favor of an alternate destination indicated by the preference settings.

Express Mail Label No. EV339076549US

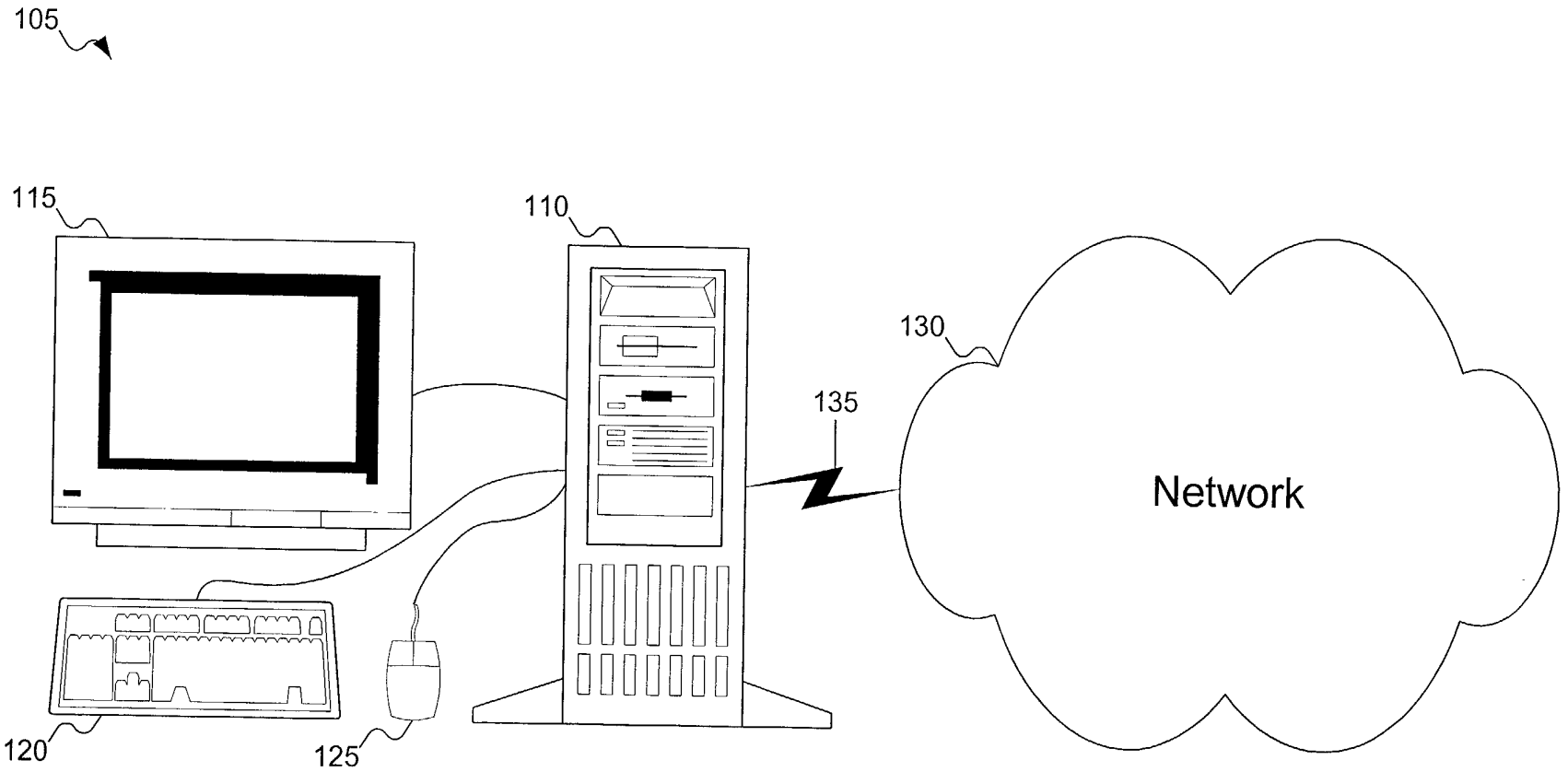

FIG. 1

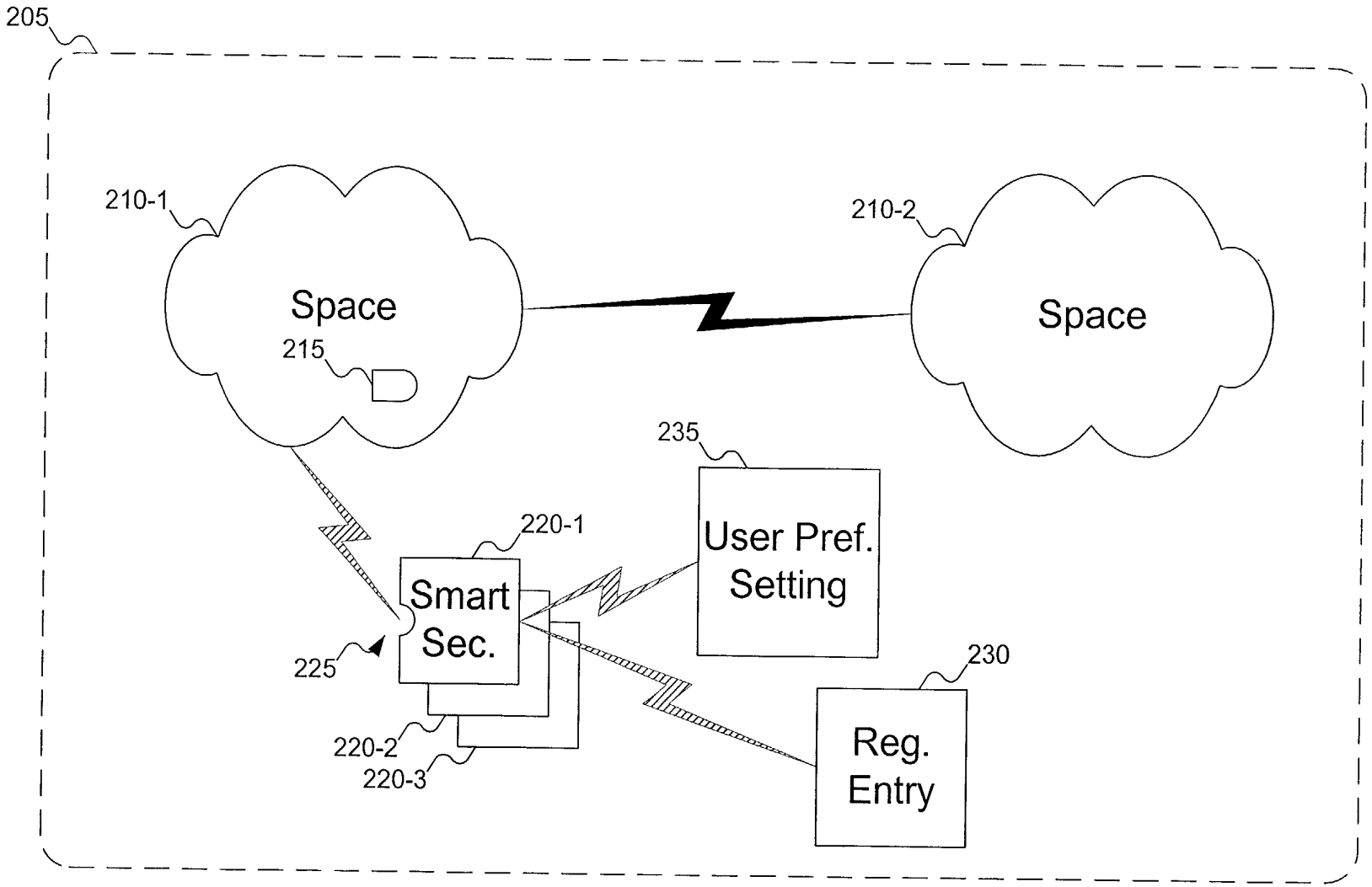
205
210-1
Space
215
210-2
Space
235
User Pref. Setting
220-1
Smart Sec.
225
220-2
220-3
230
Reg. Entry

FIG. 2

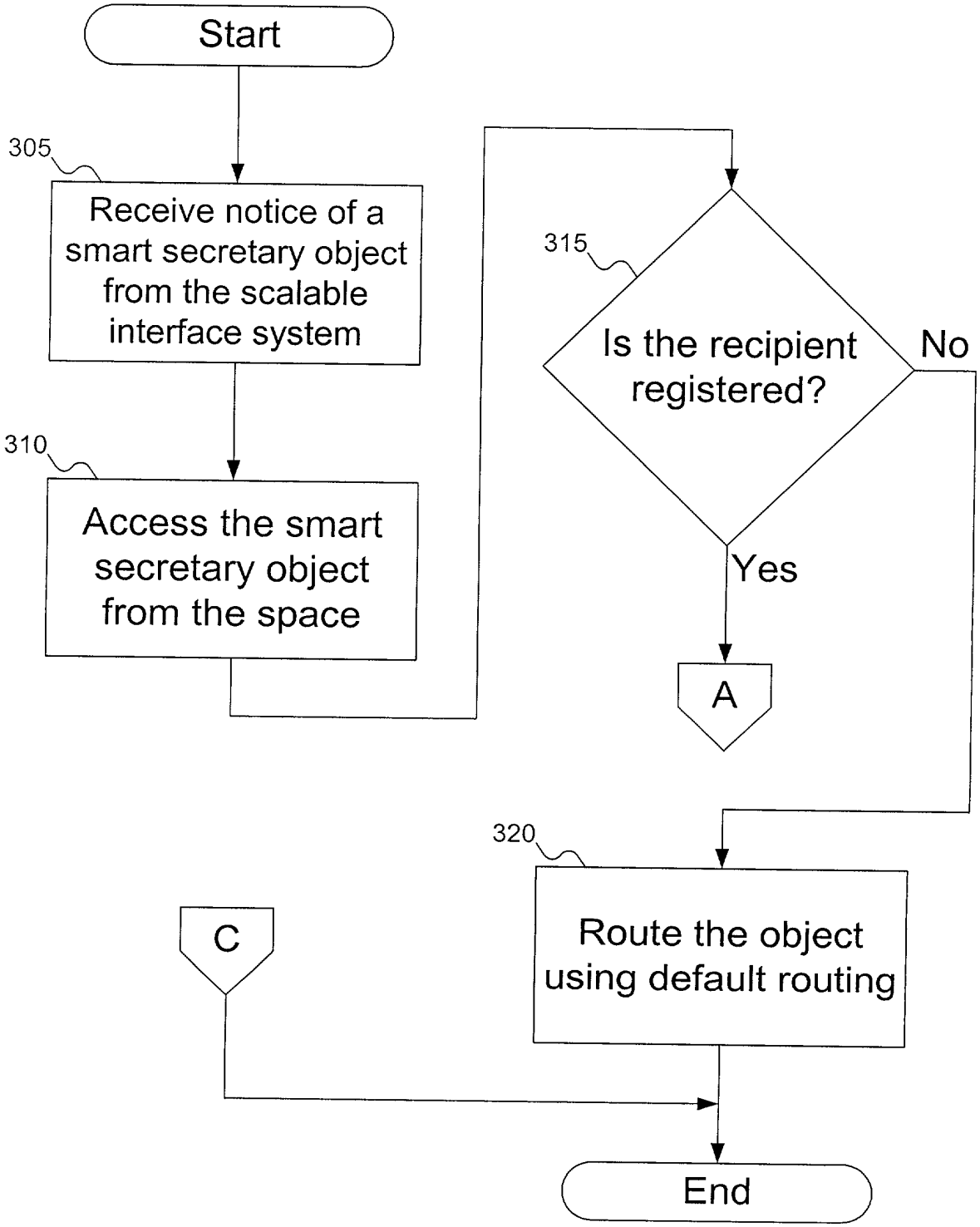
Start
305
Receive notice of a smart secretary object from the scalable interface system
310
Access the smart secretary object from the space
315
Is the recipient registered?
No
Yes
A
320
Route the object using default routing
C
End

FIG. 3A

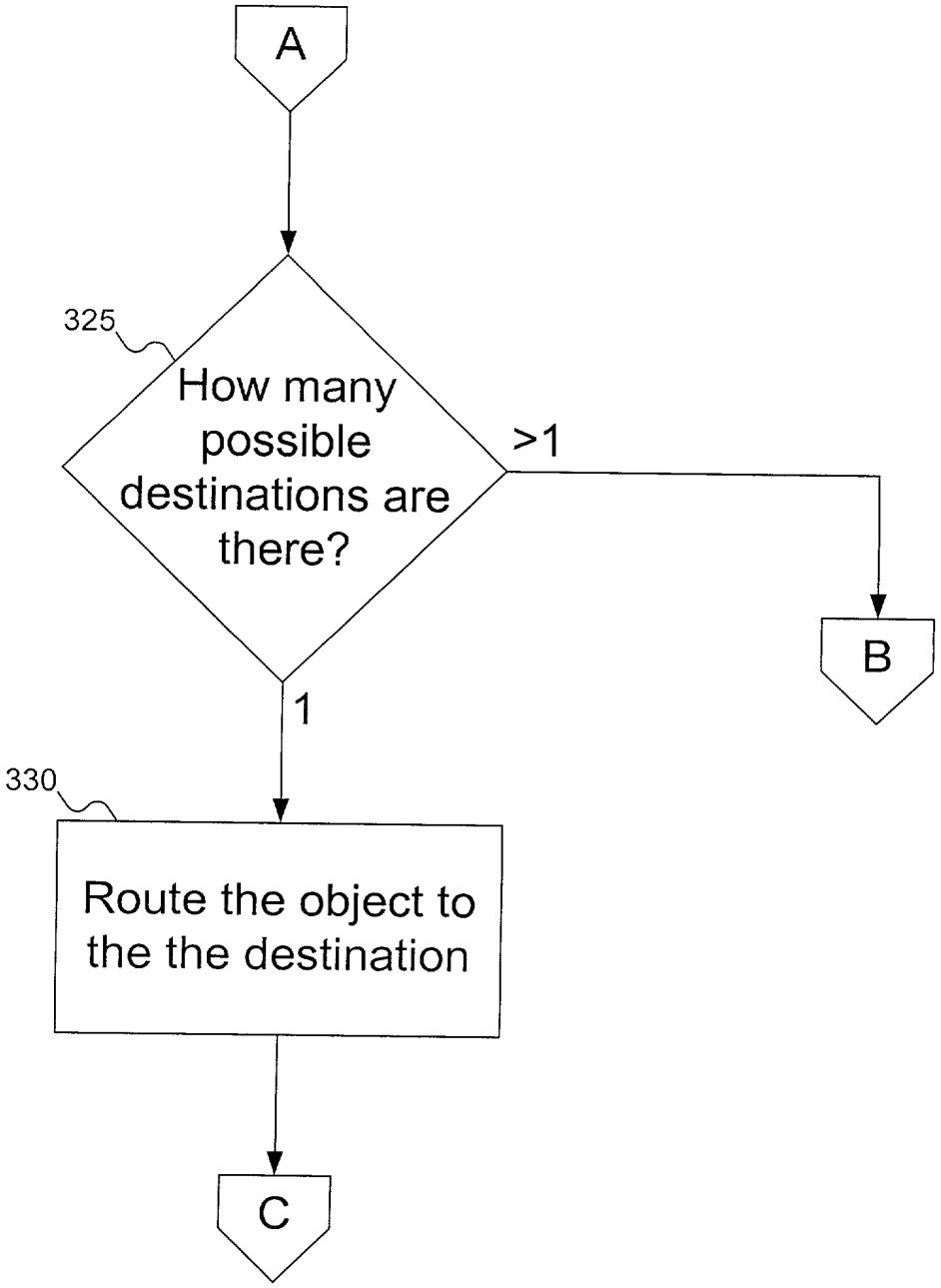
A
325
How many possible destinations are there?
>1
B
1
330
Route the object to the the destination
C

FIG. 3B

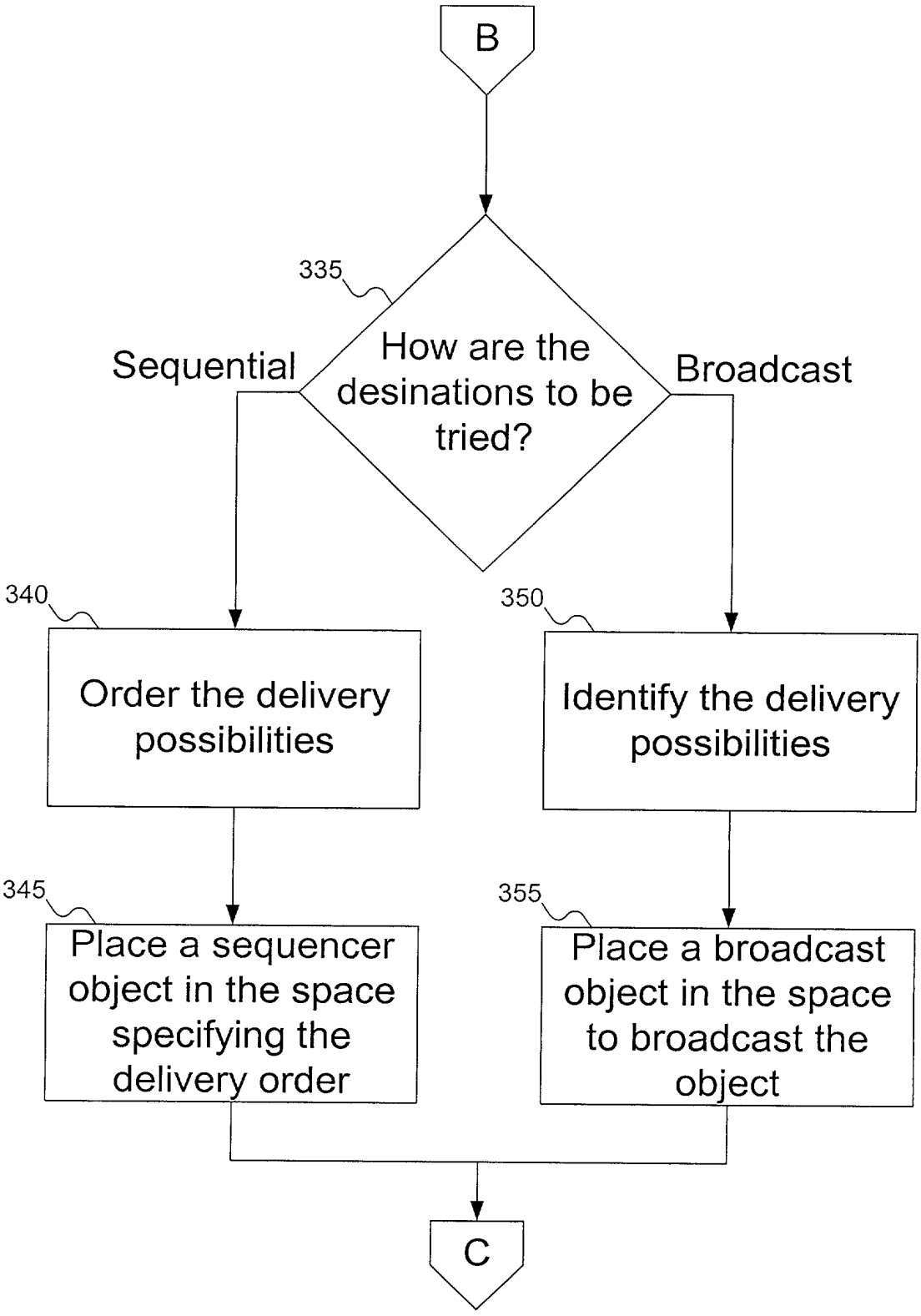
B
335
How are the desinations to be tried?
Sequential
Broadcast
340
Order the delivery possibilities
350
Identify the delivery possibilities
345
Place a sequencer object in the space specifying the delivery order
355
Place a broadcast object in the space to broadcast the object
C

FIG. 3C

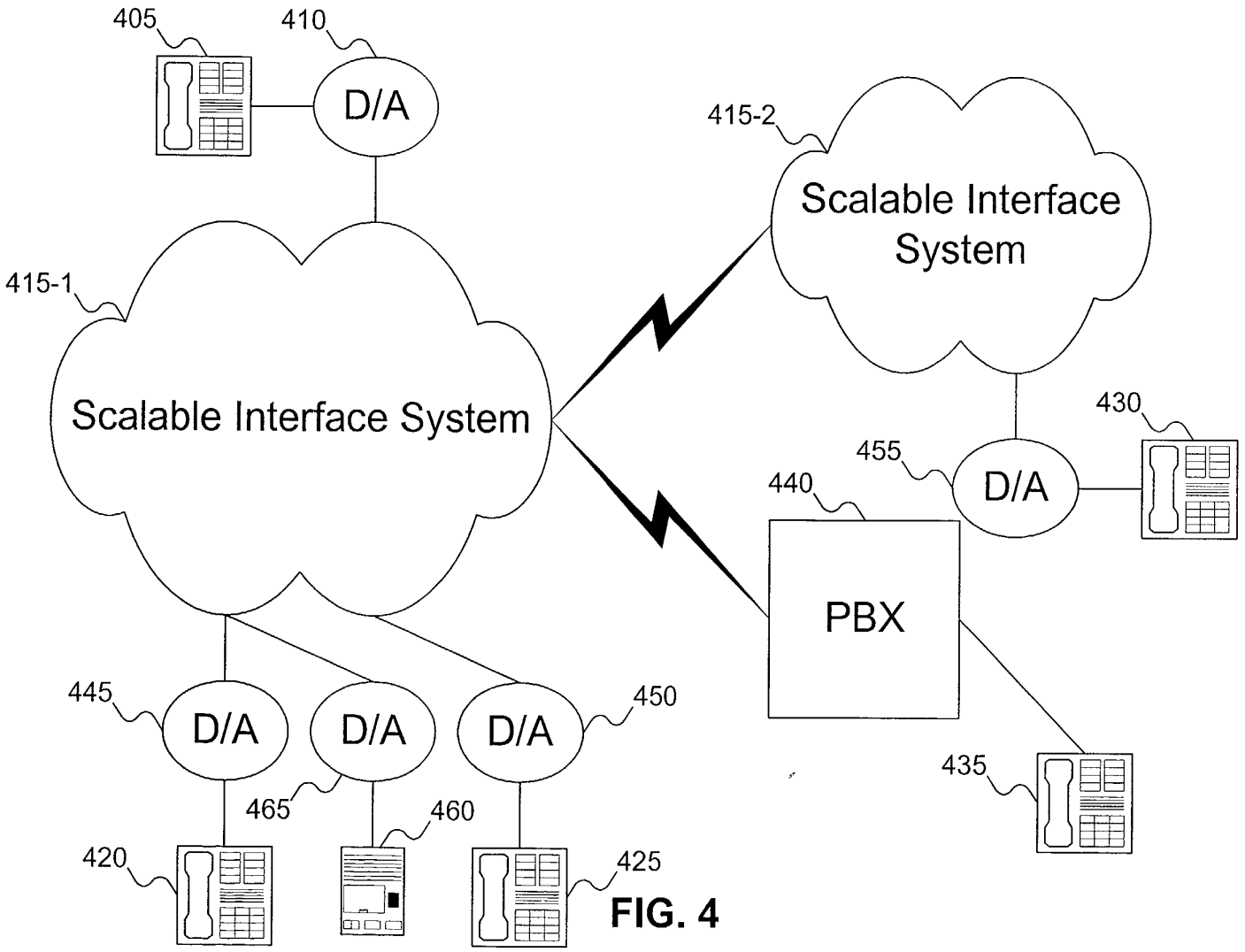
405
410
D/A
415-2
Scalable Interface System
415-1
Scalable Interface System
430
455
D/A
440
PBX
445
D/A
D/A
D/A
450
435
465
460
420
425

FIG. 4

08230T 62/08960

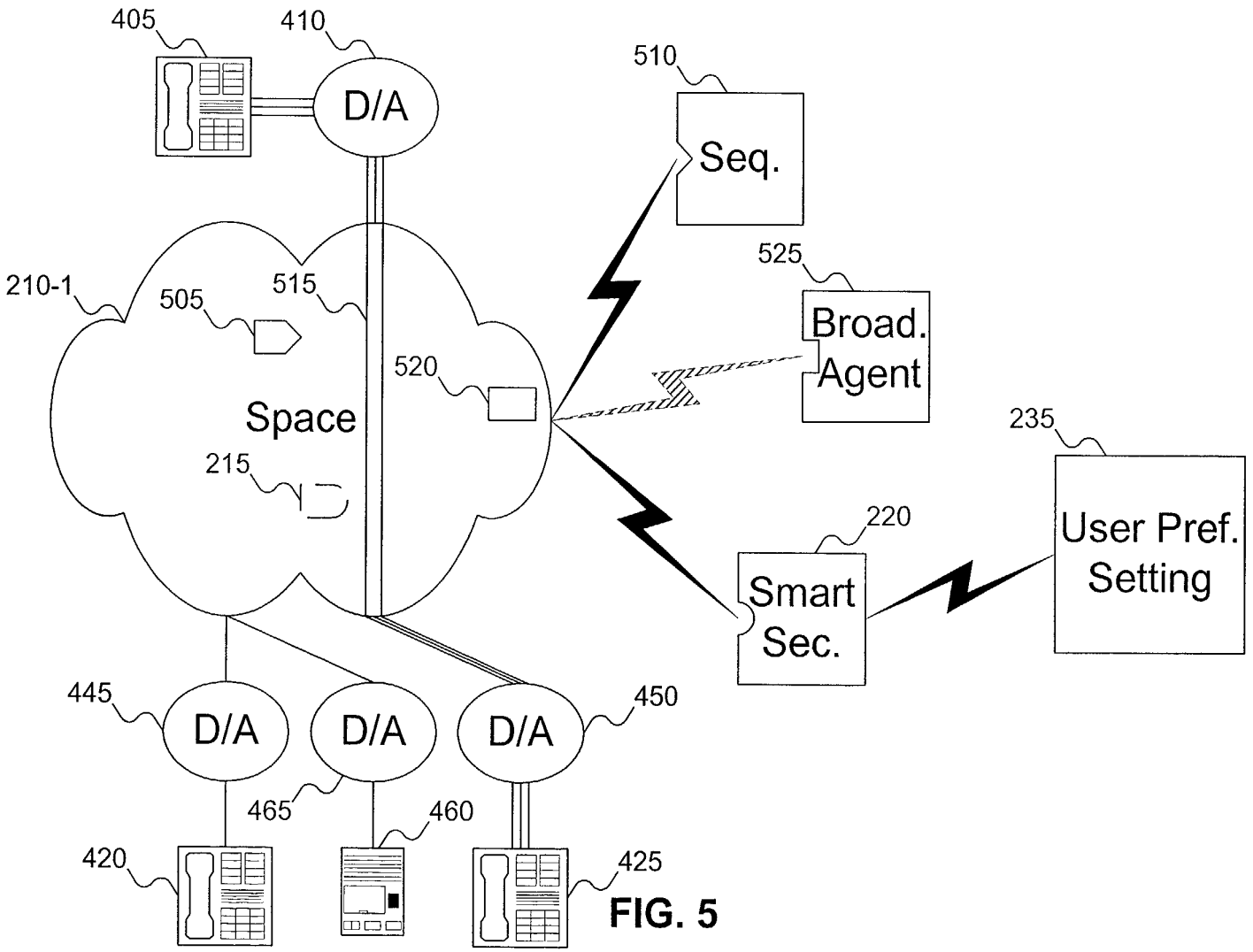

FIG. 5

PATENT APPLICATION
Attorney Docket No. 2705-137

COMBINED DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention SMART SECRETARY, the specification of which:

[x] is attached hereto.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, Sec. 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Sec. 119 (a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)			Claiming Priority?	
(Number)	(Country)	(Day/Month/Year Filed)	[ ] Yes	[ ] No

I hereby claim the benefit under Title 35, United States Code, Sec. 119(e) of any United States provisional application listed below:

Provisional Application No.	Filing Date
	August 8, 2000

I hereby claim the benefit under Title 35, United States Code, Sec. 120 or §365(c) of any PCT international application designating the United States of America listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Sec. 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Sec. 1.56 which

occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application No.)	(Filing Date)	(Status) (patented, pending, abandoned)

I hereby appoint the following attorneys to prosecute the application, to file a corresponding international application, to prosecute and transact all business in the Patent and Trademark Office connected therewith:

Customer No. 20575

Attorney Name	Registration No.
Jerome S. Marger	26,480
Alexander C. Johnson, Jr.	29,396
Alan T. McCollom	28,881
James G. Stewart	32,496
Glenn C. Brown	34,555
Stephen S. Ford	35,139
Julie L. Reed	35,349
Gregory T. Kavounas	37,862
Scott A. Schaffer	38,610
Joseph S. Makuch	39,286
James E. Harris	40,013
Graciela G. Cowger	42,444
Ariel Rogson	43,054
Craig R. Rogers	43,888

Direct all telephone calls to Stephen S. Ford at (503) 222-3613 and send all correspondence to:

Marger Johnson & McCollom, P.C.
1030 SW Morrison Street
Portland, OR 97205

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of first inventor: Peter Michael Gits

Inventor's signature: _____ 10/25/2000
(Date)

Residence: Agoura Hills, California

Citizenship: United States

Post Office address: 5550 Fairgrange Drive
Agoura Hills, California 91301

Full name of second joint inventor: Dale J. Seavey

Inventor's signature: _____ _____
(Date)

Residence: Sunol, California

Citizenship: United States

Post Office address: 1180 Kilkare Road
Sunol, California 94586

PATENT APPLICATION
Attorney Docket No. 2705-137

COMBINED DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention SMART SECRETARY, the specification of which:

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Prior Foreign Application(s)			Claiming Priority?	
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Inventor's signature: _____ _____
(Date)

Residence: Agoura Hills, California

Citizenship: United States

Post Office address: 5550 Fairgrange Drive
Agoura Hills, California 91301

Full name of second joint inventor: Dale J. Seavey

Inventor's signature: _____ 10-25-2007
(Date)

Residence: Sunol, California

Citizenship: United States

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